

CLAIMS

1. An electronic apparatus for executing an operation using an application, comprising:

5 communicating means for communicating with an external apparatus via a communication line; and
 controlling means for executing an operation using an application within the external apparatus by communicating with the external apparatus by the communicating means.

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2. The electronic apparatus as claimed in claim 1, further comprising:

15 device start notification sending means for sending a start notification of the electronic apparatus to the external apparatus by the communicating means; and
 application information registering means for registering information related to a usable application that is added to an application usability notification, when the application usability notification from the external application is received by the communicating means in response to the start notification sent by the device start notification sending means.

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25 3. The electronic apparatus as claimed in claim 2, wherein the device start notification sending means sends the

start notification to the external apparatus when a power of the electronic apparatus is turned ON.

4. The electronic apparatus as claimed in claim 1,
5 wherein the controlling means executes the operation when an operation execution request that requests execution of the operation using the application within the external apparatus is received from the external apparatus by the communicating means.

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5. The electronic apparatus as claimed in claim 4,
further comprising:

authenticating means for carrying out an authentication process to confirm validity of the operation execution request
15 when the communicating means receives the operation execution request from the external apparatus; and

operation execution permitting means for permitting execution of the operation if the authenticating means confirms that the operation execution request is valid.

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6. The electronic apparatus as claimed in claim 5,
wherein the authenticating means carries out the authentication process using authentication information that is added to the operation execution request.

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7. The electronic apparatus as claimed in claim 6,

wherein:

the authentication information is identification
information unique to the application; and

5 the authenticating means confirms that the operation
execution request is valid if the identification information
matches identification information that is registered in
advance.

10 8. The electronic apparatus as claimed in claim 6,

wherein:

the authentication information is type information
indicating a type of the application; and

15 the authenticating means confirms that the operation
execution request is valid if the type information matches
type information that is registered in advance.

9. The electronic apparatus as claimed in claim 6,

wherein:

20 the authentication information includes identification
information unique to the application and type information
indicating a type of the application; and

the authenticating means confirms that the operation
execution request is valid if the identification information
25 matches identification information that is registered in

advance and the type information matches type information that is registered in advance.

10. The electronic apparatus as claimed in claim 4,
5 further comprising:

identification information setting means for setting identification information unique to the application with respect to which an access to the electronic apparatus is permitted or rejected; and

10 operation execution permitting or rejecting means for permitting or rejecting the execution of the operation requested by the operation execution request, if identification information unique to the application and added to the operation execution request matches the identification
15 information set by the identification information setting means.

11. The electronic apparatus as claimed in claim 4,
further comprising:

20 line type judging means for judging a type of communication line via which the operation execution request is received by the communicating means; and
operation execution permitting or rejecting means for permitting or rejecting the execution of the operation
25 requested by the operation execution request depending on a

judgement result of the line type judging means.

12. The electronic apparatus as claimed in claim 4,
further comprising:

5 execution request judging means for judging whether the
operation execution request is a normal request or an abnormal
request;

abnormality counting means for counting a number of times
the abnormal request is judged by the execution request
10 judging means; and

operation execution rejecting means for rejecting the
execution of the operation requested by the operation
execution request if a counted value counted by the
abnormality counting means exceeds a predetermined value.

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13. The electronic apparatus as claimed in claim 1,
further comprising:

device usability notification sending means for sending
to the external apparatus a usability notification indicating
20 a usability of the electronic apparatus when the communicating
means receives a connection request from the external
apparatus,

wherein the controlling means executes the operation when
an operation execution request that requests execution of the
25 operation using the application within the external apparatus

is received from the external apparatus by the communicating means in response to the usability notification sent to the external apparatus by the device usability notification sending means.

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14. The electronic apparatus as claimed in claim 13, further comprising:

application information registering means for registering information related to a usable application that is added to 10 the connection request, when the connection request from the external application is received by the communicating means.

15. The electronic apparatus as claimed in claim 13, further comprising:

15 authenticating means for carrying out an authentication process to confirm validity of the connection request when the communicating means receives the connection request from the external apparatus; and

transmission permitting means for permitting sending of 20 the usability notification if the authenticating means confirms that the connection request is valid.

16. The electronic apparatus as claimed in claim 15, wherein the authenticating means carries out the 25 authentication process using authentication information that

is added to the connection request.

17. The electronic apparatus as claimed in claim
16, wherein:

5 the authentication information is identification
information unique to the application; and
 the authenticating means confirms that the connection
request is valid if the identification information matches
identification information that is registered in advance.

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18. The electronic apparatus as claimed in claim
13, wherein the communicating means carries out a
communication sequence for confirming validity of a connection
request according to a protocol that is predetermined between
15 the electronic apparatus and the external apparatus when the
connection request is received from the external apparatus,
and further comprising:

authenticating means for carrying out an authentication
process to confirm validity of the connection request from the
20 communication sequence carried out by the communicating means;
and

transmission permitting means for permitting the device
usability notification sending means to send the device
usability notification if the authenticating means confirms
25 that the connection request is valid.

19. The electronic apparatus as claimed in claim
18, wherein the authenticating means confirms that the
connection request is valid if the communication sequence is
5 in accordance with the protocol.

20. The electronic apparatus as claimed in claim
13, further comprising:

first authenticating means for carrying out a first
10 authentication process to confirm validity of a connection
request when the communicating means receives the connection
request from the external apparatus;

transmission permitting means for permitting the device
usability notification sending means to send the device
15 usability notification if the first authenticating means
confirms that the connection request is valid;

second authenticating means for carrying out a second
authentication process to confirm validity of the operation
execution request when the communicating means receives the
20 operation execution request from the external apparatus in
response to the device usability notification sent by the
device usability notification sending means; and

operation execution permitting means for permitting
execution of the operation if the second authenticating means
25 confirms that the operation execution request is valid.

21. The electronic apparatus as claimed in claim
13, wherein the communicating means carries out a
communication sequence for confirming validity of a connection
5 request according to a protocol that is predetermined between
the electronic apparatus and the external apparatus when the
connection request is received from the external apparatus,
and further comprising:

first authenticating means for carrying out a first
10 authentication process to confirm validity of the connection
request from the communication sequence carried out by the
communicating means; and

transmission permitting means for permitting the device
usability notification sending means to send the device
15 usability notification if the first authenticating means
confirms that the connection request is valid;

second authenticating means for carrying out a second
authentication process to confirm validity of the operation
execution request when the communicating means receives the
20 operation execution request from the external apparatus in
response to the device usability notification sent by the
device usability notification sending means; and

operation execution permitting means for permitting
execution of the operation if the second authenticating means
25 confirms that the operation execution request is valid.

22. An electronic apparatus system in which the electronic apparatus of claim 2 and the external apparatus are communicably coupled via a communication line, said external 5 apparatus comprising:

application storing means;
an other communicating means for communicating with the electronic apparatus via the communication line; and
application usability notification sending means for 10 adding information that is related to the usable application and is stored in the application storing means to the application usability notification before sending the application usability notification to the electronic apparatus by the other communicating means, when the other communicating 15 means receives the start notification from the electronic apparatus.

23. An electronic apparatus system in which the electronic apparatus of claim 4 and the external apparatus are 20 communicably coupled via a communication line, said external apparatus comprising:

application storing means;
an other communicating means for communicating with the electronic apparatus via the communication line; and 25 operation execution request sending means for sending the

operation execution request that requests execution of the operation using a usable application stored in the application storing means to the electronic apparatus by the other communicating means.

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24. An electronic apparatus system in which the electronic apparatus of claim 13 and the external apparatus are communicably coupled via a communication line, said external apparatus comprising:

10 application storing means;

an other communicating means for communicating with the electronic apparatus via the communication line;

connection request sending means for sending a connection request to the electronic apparatus by the other communicating

15 means; and

operation execution request sending means for sending the operation execution request that requests execution of the operation using a usable application stored in the application storing means to the electronic apparatus by the other communicating means when the usability notification is received from the electronic apparatus in response to the connection request sent by the connection request sending means.

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25. The electronic apparatus system as claimed in

claim 24, wherein the connection request sending means sends the connection request to the electronic apparatus by the other communicating means when starting the application.

5 26. The electronic apparatus system as claimed in claim 24, wherein said external apparatus further comprises operation means, and the connection request sending means sends the connection request to the electronic apparatus by the other communicating means in response to an operation by
10 the operation means.

27. An electronic apparatus system in which the electronic apparatus of claim 14 and the external apparatus are communicably coupled via a communication line, said
15 external apparatus comprising:

application storing means;
an other communicating means for communicating with the electronic apparatus via the communication line;
connection request sending means for sending the connection request to the electronic apparatus by the other
20 communicating means; and
operation execution request sending means for sending the operation execution request that requests execution of the operation using a usable application stored in the application
25 storing means to the electronic apparatus by the other

communicating means when the usability notification is received from the electronic apparatus in response to the connection request sent by the connection request sending means.

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28. An electronic apparatus system in which the electronic apparatus of claim 13 and the external apparatus are communicably coupled via a communication line, said external apparatus comprising:

- 10 operation means;
- application storing means;
- an other communicating means for communicating with the electronic apparatus via the communication line;
- connection request sending means for sending a connection request to the electronic apparatus by the other communicating means;
- 15 function inquiring means for inquiring an existence of a function specified by the operation means to the electronic apparatus by the other communicating means, when the usability notification is received from usable electronic apparatuses in response to the connection request sent by the connection request sending means;
- 20 device selecting means for selecting an electronic apparatus capable of realizing the specified function from the usable electronic apparatuses, when an inquiry result is

received in response to the inquiring made by the function inquiring means; and

operation execution request sending means for sending the operation execution request that requests execution of the 5 operation using a usable application stored in the application storing means, by the other communicating means, to the electronic apparatus selected by the device selecting means.

29. A control method for an electronic apparatus 10 which executes an operation using an application, comprising:

communicating with an external apparatus via a communication line; and

executing an operation using an application within the external apparatus.

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30. The control method for the electronic apparatus as claimed in claim 29, further comprising:

sending a start notification of the electronic apparatus to the external apparatus; and

20 registering information related to a usable application that is added to an application usability notification, when the application usability notification from the external application is received in response to the start notification.

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31. The control method for the electronic

apparatus as claimed in claim 30, wherein the start notification is sent to the external apparatus when a power of the electronic apparatus is turned ON.

5 32. The control method for the electronic apparatus as claimed in claim 29, further comprising:
 executing the operation when an operation execution request that requests execution of the operation using the application within the external apparatus is received from the
10 external apparatus.

 33. The control method for the electronic apparatus as claimed in claim 32, further comprising:
 carrying out an authentication process to confirm
15 validity of the operation execution request when the operation execution request is received from the external apparatus; and
 permitting execution of the operation if the authentication process confirms that the operation execution request is valid.

20 34. The control method for the electronic apparatus as claimed in claim 32, further comprising:
 setting identification information unique to the application with respect to which an access to the electronic
25 apparatus is permitted or rejected; and

permitting or rejecting the execution of the operation requested by the operation execution request, if identification information unique to the application and added to the operation execution request matches the set 5 identification information.

35. The control method for the electronic apparatus as claimed in claim 32, further comprising:

judging a type of communication line via which the 10 operation execution request is received; and permitting or rejecting the execution of the operation requested by the operation execution request depending on a judgement result of judging the type of communication line.

15 36. The control method for the electronic apparatus as claimed in claim 32, further comprising:

judging whether the operation execution request is a normal request or an abnormal request; counting a number of times the abnormal request is 20 judged; and

rejecting the execution of the operation requested by the operation execution request if a counted value of the abnormal request exceeds a predetermined value.

25 37. The control method for the electronic

apparatus as claimed in claim 29, further comprising:

sending to the external apparatus a usability notification indicating a usability of the electronic apparatus when a connection request is received from the
5 external apparatus,

wherein the operation is executed when an operation execution request that requests execution of the operation using the application within the external apparatus is received from the external apparatus in response to the
10 usability notification sent to the external apparatus.

38. The control method for the electronic apparatus as claimed in claim 37, further comprising:

registering information related to a usable application
15 that is added to the connection request when the connection request is received from the external application.

39. The control method for the electronic apparatus as claimed in claim 37, further comprising:

20 carrying out an authentication process to confirm validity of the connection request when the connection request is received from the external apparatus; and
permitting sending of the usability notification if the authenticating process confirms that the connection request is
25 valid.

40. The control method for the electronic apparatus as claimed in claim 37, further comprising:

carrying out a communication sequence for confirming validity of a connection request according to a protocol that is predetermined between the electronic apparatus and the external apparatus when the connection request is received from the external apparatus;

carrying out an authentication process to confirm validity of the connection request from the communication sequence; and

permitting sending of the device usability notification if the authenticating process confirms that the connection request is valid.

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41. The control method for the electronic apparatus as claimed in claim 37, further comprising:

carrying out a first authentication process to confirm validity of a connection request when the connection request is received from the external apparatus;

permitting sending of the device usability notification if the first authenticating process confirms that the connection request is valid;

carrying out a second authentication process to confirm validity of the operation execution request when the operation

execution request is received from the external apparatus in response to the device usability notification; and

permitting execution of the operation if the second authenticating process confirms that the operation execution

5 request is valid.

42. The control method for the electronic apparatus as claimed in claim 37, further comprising:

carrying out a communication sequence for confirming 10 validity of a connection request according to a protocol that is predetermined between the electronic apparatus and the external apparatus when the connection request is received from the external apparatus;

carrying out a first authentication process to confirm 15 validity of the connection request from the communication sequence; and

permitting sending of the device usability notification if the first authenticating process confirms that the connection request is valid;

20 carrying out a second authentication process to confirm validity of the operation execution request when the operation execution request is received from the external apparatus in response to the device usability notification; and

permitting execution of the operation if the second 25 authenticating process confirms that the operation execution

request is valid.

43. A computer-readable storage medium which stores a program for causing a computer of an electronic apparatus to execute an operation using an application, said 5 program comprising procedures for causing the computer to realize:

a communicating function for communicating with an external apparatus via a communication line; and

10 a controlling function for executing an operation using an application within the external apparatus by communicating with the external apparatus by the communicating function.

44. The computer-readable storage medium as 15 claimed in claim 43, wherein the program further comprises procedures for causing the computer to realize:

a device start notification sending function for sending a start notification of the electronic apparatus to the external apparatus by the communicating function; and

20 an application information registering function for registering information related to a usable application that is added to an application usability notification, when the application usability notification from the external application is received by the communicating function in 25 response to the start notification sent by the device start

notification sending function.

45. The computer-readable storage medium as
claimed in claim 44, wherein the device start notification
5 sending function sends the start notification to the external
apparatus when a power of the electronic apparatus is turned
ON.

46. The computer-readable storage medium as
10 claimed in claim 43, wherein the controlling function executes
the operation when an operation execution request that
requests execution of the operation using the application
within the external apparatus is received from the external
apparatus by the communicating function.

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47. The computer-readable storage medium as
claimed in claim 46, wherein the program further comprises
procedures for causing the computer to realize:
an authenticating function for carrying out an
20 authentication process to confirm validity of the operation
execution request when the communicating function receives the
operation execution request from the external apparatus; and
an operation execution permitting function for permitting
execution of the operation if the authenticating function
25 confirms that the operation execution request is valid.

48. The computer-readable storage medium as
claimed in claim 47, wherein the authenticating function
carries out the authentication process using authentication
information that is added to the operation execution request.
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49. The computer-readable storage medium as
claimed in claim 48, wherein:

the authentication information is identification
10 information unique to the application; and
the authenticating function confirms that the operation
execution request is valid if the identification information
matches identification information that is registered in
advance.

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50. The computer-readable storage medium as
claimed in claim 48, wherein:

the authentication information is type information
indicating a type of the application; and
20 the authenticating function confirms that the operation
execution request is valid if the type information matches
type information that is registered in advance.

25 51. The computer-readable storage medium as
claimed in claim 48, wherein:

the authentication information includes identification information unique to the application and type information indicating a type of the application; and

the authenticating function confirms that the operation
5 execution request is valid if the identification information matches identification information that is registered in advance and the type information matches type information that is registered in advance.

10 52. The computer-readable storage medium as claimed in claim 46, wherein the program further comprises procedures for causing the computer to realize:

an identification information setting function for setting identification information unique to the application
15 with respect to which an access to the electronic apparatus is permitted or rejected; and

an operation execution permitting or rejecting function for permitting or rejecting the execution of the operation requested by the operation execution request, if
20 identification information unique to the application and added to the operation execution request matches the identification information set by the identification information setting function.

25 53. The computer-readable storage medium as

claimed in claim 46, wherein the program further comprises procedures for causing the computer to realize:

a line type judging function for judging a type of communication line via which the operation execution request
5 is received by the communicating function; and

an operation execution permitting or rejecting function for permitting or rejecting the execution of the operation requested by the operation execution request depending on a judgement result of the line type judging function.

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54. The computer-readable storage medium as claimed in claim 46, wherein the program further comprises procedures for causing the computer to realize:

an execution request judging function for judging whether
15 the operation execution request is a normal request or an abnormal request;

an abnormality counting function for counting a number of times the abnormal request is judged by the execution request judging function; and

20 an operation execution rejecting function for rejecting the execution of the operation requested by the operation execution request if a counted value counted by the abnormality counting function exceeds a predetermined value.

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55. The computer-readable storage medium as

claimed in claim 43, wherein the program further comprises procedures for causing the computer to realize:

a device usability notification sending function for sending to the external apparatus a usability notification 5 indicating a usability of the electronic apparatus when the communicating function receives a connection request from the external apparatus,

wherein the controlling function executes the operation when an operation execution request that requests execution of 10 the operation using the application within the external apparatus is received from the external apparatus by the communicating function in response to the usability notification sent to the external apparatus by the device usability notification sending function.

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56. The computer-readable storage medium as claimed in claim 55, wherein the program further comprises procedures for causing the computer to realize:

an application information registering function for 20 registering information related to a usable application that is added to the connection request, when the connection request from the external application is received by the communicating function.

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57. The computer-readable storage medium as

claimed in claim 55, wherein the program further comprises procedures for causing the computer to realize:

an authenticating function for carrying out an authentication process to confirm validity of the connection
5 request when the communicating function receives the connection request from the external apparatus; and
a transmission permitting function for permitting sending of the usability notification if the authenticating function confirms that the connection request is valid.

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58. The computer-readable storage medium as claimed in claim 57, wherein the authenticating function carries out the authentication process using authentication information that is added to the connection request.

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59. The computer-readable storage medium as claimed in claim 58, wherein:

the authentication information is identification information unique to the application; and
20 the authenticating function confirms that the connection request is valid if the identification information matches identification information that is registered in advance.

25 60. The computer-readable storage medium as claimed in claim 55, wherein the communicating function

carries out a communication sequence for confirming validity
of a connection request according to a protocol that is
predetermined between the electronic apparatus and the
external apparatus when the connection request is received
5 from the external apparatus, and the program further comprises
procedures for causing the computer to realize:

an authenticating function for carrying out an
authentication process to confirm validity of the connection
request from the communication sequence carried out by the
10 communicating function; and

a transmission permitting function for permitting the
device usability notification sending function to send the
device usability notification if the authenticating function
confirms that the connection request is valid.

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61. The computer-readable storage medium as
claimed in claim 60, wherein the authenticating function
confirms that the connection request is valid if the
communication sequence is in accordance with the protocol.

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62. The computer-readable storage medium as
claimed in claim 55, wherein the program further comprises
procedures for causing the computer to realize:

25 a first authenticating function for carrying out a first
authentication process to confirm validity of a connection

request when the communicating function receives the connection request from the external apparatus;

a transmission permitting function for permitting the device usability notification sending function to send the
5 device usability notification if the first authenticating function confirms that the connection request is valid;

a second authenticating function for carrying out a second authentication process to confirm validity of the operation execution request when the communicating function
10 receives the operation execution request from the external apparatus in response to the device usability notification sent by the device usability notification sending function;
and

an operation execution permitting function for permitting
15 execution of the operation if the second authenticating function confirms that the operation execution request is valid.

63. The computer-readable storage medium as
20 claimed in claim 55, wherein the communicating function carries out a communication sequence for confirming validity of a connection request according to a protocol that is predetermined between the electronic apparatus and the external apparatus when the connection request is received
25 from the external apparatus, and the program further comprises

procedures for causing the computer to realize:

a first authenticating function for carrying out a first authentication process to confirm validity of the connection request from the communication sequence carried out by the
5 communicating function; and

a transmission permitting function for permitting the device usability notification sending function to send the device usability notification if the first authenticating function confirms that the connection request is valid;

10 a second authenticating function for carrying out a second authentication process to confirm validity of the operation execution request when the communicating function receives the operation execution request from the external apparatus in response to the device usability notification
15 sent by the device usability notification sending function;
and

an operation execution permitting function for permitting execution of the operation if the second authenticating function confirms that the operation execution request is
20 valid.